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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,986	02/10/2004	John F. Yanus	D/A3066	1319

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EXAMINER	
RODEE, CHRISTOPHER D	

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/775,986	YANUS ET AL.	
	Examiner	Art Unit	
	Christopher RoDee	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6-18,20-27,30 and 31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-18,20-27,30 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3, 6-18, 20-27, and 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The instant claims have been amended to require a first and second charge transport layer but to exclude a hindered phenol from the first charge transport layer. Applicants refer to ¶¶ [0006] and [0014] as providing basis for this limitation.

The Examiner has carefully reviewed the specification. Each of the cited paragraphs discloses two charge transport layers and in each paragraph the second charge transport layer is disclosed as having a hindered phenol. These paragraphs are silent, however, as to whether the hindered phenol is excluded from the first charge transport layer. These paragraphs are also silent about the inclusion of the hindered phenol in the first charge transport layer. There is simply no discussion in the cited paragraphs and the specification as a whole about either the presence or absence of a hindered phenol in the first charge transport layer.

Although inventors may exclude what they have specifically disclosed and contemplated (*In re Johnson*, 194 USPQ 187 (CCPA 1977)), inventors cannot include or exclude what they did not contemplate (*Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983)). The mere absence of

a positive recitation is not basis for an exclusion. Because applicants have not specifically disclosed the presence or absence of a hindered phenol in the first charge transport layer, the specification does not permit the artisan to exclude these compounds now. The instant specification does not provide basis for the claims as now presented and new matter is present.

Claim 17 also does not have basis in the specification as filed because there is no disclosure of each of the first and second charge transport layers as having independent thicknesses of about 10 to about 50 μm. The specification does disclose a single charge transport layer as having this thickness but not each of a first and second charge transport layer.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 20-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 20-22 are indefinite because it is unclear which charge transport layer has the aryl amine molecules specified. The independent claims have been amended to recite two charge transport layers and it is unclear which of these two layers has the requisite compounds.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 6-9, 14-18, 20, 24, 25, 27, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokutake *et al.* in US Patent Application Publication 2003/0087171 in view of Mori in US Patent 5,567,557 and further in view of *Handbook of Imaging Materials*. Diamond, Arthur S & David Weiss (eds.) pp. 145-164.

Tokutake discloses an organic photoreceptor comprising a conductive support, a charge generation layer, a first charge transport layer having a bonding resin and a charge transport compound, and a second charge transport layer having a bonding resin, fluorine resin particles, and a charge transport compound-. In Example 1, the photoreceptor includes a conductive support, a titanium oxide-containing subbing layer of 2 micron thickness (also see ¶ [0012]), a charge generation layer comprising titanyl phthalocyanine and a butyral resin of 0.2 micron thickness, a first charge transport layer of 20 micron thickness comprising a styrene acrylate binder resin, and an aryl amine charge transport compound, and a second charge transport layer of 6 micron thickness containing the same charge transport material and an antioxidant with a different binder resin and a silicone oil (¶ [0026]; Example 1). Tokutake prefers the use of an antioxidant in the first charge transport layer (¶ [0022]), but this compound is not required (e.g, see document claim 1). Useful antioxidants, when included in the first charge transport layer, are paraphenylene diamines, hydroquinone, organic sulfur compounds, and organic phosphorous compounds (¶ [0022]).

The second charge transport layer as having a thickness of 3 to 15 microns (¶ [0063]), and the amount of the antioxidant is from 0.5 to 30 weight percent (¶ [0059]). In addition, the reference discloses various useful resins for the first charge transport layer, such as bisphenol A-type (see instant claim 3) and bisphenol Z-type polycarbonates and polystyrenes (¶¶ [0020], [0026]). Diaryl amines and benzidines are useful charge transport materials for each layer (¶¶ [0021]] & [0057]). The amount of the charge transport material is 40 to 280 parts by weight per

100 parts of the binder resin in the first charge transport layer (¶ [0021]). The second transport layer contains a denatured polycarbonate resin having units such as (II-1), such as in polymer (IV-2) (pp. 8-9). This resin may be mixed with a styrene resin to form the binder resin (¶ [0062]). The charge generation layer contain a binder resin such as a polycarbonate (¶ [0014]).

Tokutake does not disclose the hindered phenol antioxidant of the instant claims for the second charge transport layer, but Mori discloses an electrophotgraphic photoreceptor which comprises; a conductive substrate, an intermediate layer on the conductive substrate, a photosensitive bilayer of an organic material on the intermediate layer, the photosensitive bilayer includes a charge generation layer and a charge transport layer, the charge generation layer being deposited on the intermediate layer, the charge transport layer being deposited on the charge generation layer, the charge transport layer being an outermost layer of the photosensitive bilayer, and the charge transport layer contains an ester phosphite antioxidant and a hindered phenol antioxidant (col. 4, l. 1-12). The exemplified hindered phenol antioxidant is given by the formula 4-1 or 4-5 (col. 12). The antioxidant is present in an amount of from 0.01 to 10 weight percent (col. 13, l. 20-24; Table 1). The combination of antioxidants in the charge transport layer permits the artisan to control degradation of the photoreceptor from active gasses, such as ozone, during the copying process.

Diamond reviews the basic steps of the electrophotographic copying process. This process includes a charging step (§ 4.2.1), which Diamond identifies as producing nitrogen oxides and ozone as byproducts, which have deleterious effects on the photoreceptor.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add an ester phosphite antioxidant and a hindered phenol antioxidant to the second charge transport layer of Tokutake because these compounds reduce the deleterious effects of ozone and other gaseous by-products formed during the photoreceptor

charging process, as noted by Diamond. The artisan would have found it obvious to optimize the amounts of the antioxidants in order to minimize the deleterious effects of ozone during charging. The artisan would also have found it obvious to use of a paraphenylene diamine, hydroquinone, organic sulfur compound, or organic phosphorous compound as the antioxidant in the first charge transport layer because the reference specifically discloses these compounds as effective anticoxidants for the first charge transport layer. Alternatively, it would have been obvious to one having ordinary skill in the art at the time the invention was made to not use an antioxidant in the first charge transport layer because these compounds are not required by the reference. Although preferred, the inventor is not bound by the preferred embodiments of a teaching. The fact that antioxidants are not required by the reference is evidenced by the fact that they are not recited in document claim 1.

This new grounds of rejection fully responds to applicants' traversal.

Claims 1-3, 6-18, 20-27, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokutake *et al.* in US Patent Application Publication 2003/0087171 in view of Mori in US Patent 5,567,557 and further in view of *Handbook of Imaging Materials*. Diamond, Arthur S & David Weiss (eds.) pp. 145-164 as applied to claims 1-3, 6-9, 14-18, 20, 24, 25, 27, and 31 above, and further in view of Yuh *et al.* in US Patent 6,261,729.

Mori and Diamond were described above. These references do not disclose the hole blocking layer and adhesive layer of the instant claims, the specific aryl amine of the claims, or the photogenerating pigment of the claims.

Yuh discloses an imaging member comprising a substrate, a charge blocking layer, and an imaging layer (Abstract). As seen in Figures 1 and 2 these imaging members are provided with an anti-curl layer **1**, a supporting substrate **2**, an electrically conductive ground plane **3**, a

charge blocking layer **4**, an adhesive layer **5**, a charge generating layer **6**, a charge transport layer **7**, an overcoating layer **8**, and a ground strip **9** (col. 3, l. 38-47). Useful supporting substrates include those composed of aluminum, polyesters, polycarbonates, polyurethanes, or polyamides (col. 4, l. 45-col. 5, l. 17). The electrically conductive ground plane is present when the substrate is not conductive. This ground plane is a metal such as aluminum or titanium (col. 5, l. 62 - col. 6, l. 32). The substrate maybe rigid or flexible (col. 4, l. 60).

The charge blocking layer is disclosed as a hole blocking layer (col. 6, l. 41-45). This layer contains a phenolic binder having units of a first, second, and third type as depicted in column 7 as well as n-type particles (col. 10, l. 53-59). Preferred n-type particles include titanium dioxide (col. 10, l. 56; col. 11, l. 40-44; Example I), which may be treated with other oxides such as silica (col. 11, l. 65 - col. 12, l. 3). The blocking layer has a thickness of from about 0.0.1 to about 10 microns (col. 10, l. 1-4). Preferred phenolic polymers include VARCUM 29112 (Example I), which is a formaldehyde polymer of ammonia, cresol, and phenol (spec. p. 16, l. 20-21), and DURITE 97 (Example II), which is a formaldehyde polymer of phenol, p-tert-butylphenol, and cresol (spec. p. 16, l. 17-19).

The charge generating layer of the imaging member contains a charge generating pigment, such as a phthalocyanine. Copper phthalocyanine. alumino-chloro phthalocyanine, and hydroxy gallium phthalocyanine are specifically disclosed (col. 13, l. 54 - col. 14, l. 13). This layer has a thickness of from about 0.1 to about 10 microns (col. 14, l. 58-65) and contains about 30 to about 90 weight percent phthalocyanine pigments (col. 14, l. 20-47) and the remainder a binder, such as polycarbonates, polyesters, and polyvinylacetals, among others (col. 14, l. 14-19). The charge transporting layer contains a charge transport compound, such as N,N'-diphenyl-N,N'-bis(alkylphenyl)-(1,1'-biphenyl)-4,4'-diamine wherein alkyl is selected from the group consisting of methyl, ethyl, propyl, butyl, or hexyl (col. 15, l. 9-42; Example I). The

artisan would recognize this compound as a hole transport material. The adhesive layer contains a polyester adhesive with a Mw of from about 50,000 to about 100,000, and preferably about 70,000, and a Mn of preferably about 35,000 (col. 13, l. 25-53).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the hole blocking layer and adhesive layer of Yuh in the invention of Tokutake because Tokutake teaches that a sub-layer should be used which reduces residual potential and Yuh discloses a specific sublayer for a photoreceptor which meets this requirement. Alternatively, Yuh teaches that the hole blocking layer gives improved image quality through use (col. 1, l. 11-50) and is commonly known as an undercoat layer. Thus, the artisan would have ample motivation to use the hole blocking layer of Yuh in Tokutake in order to give improved image quality. It would also have been obvious to use the adhesive layer of Yuh with the blocking layer of that reference because the disclosed adhesive layer is taught by Yuh as being effective with the disclosed blocking layer. The artisan would also have found it obvious to use the hydroxygallium phthalocyanine and specific benzidine (see Tokutake: ¶ [0021]) because these compounds are exceedingly well known for their charge generation and charge transport function.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on most weekdays from 6:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cdr
4 April 2006

CHRISTOPHER RODEE
PRIMARY EXAMINER